

Migraine and tension type headache; an acupuncture standardized neuromodulation protocol for people with central sensitization (CS) of the nervous system.

Dr. Losio Antonio UMAB; Commissione Medicine Complementari OMCeO Brescia



Introduction

Central sensitization (CS) is a process characterized by generalized hypersensitivity of the somatosensory system; we can better define it as an amplification of neural signaling within the central nervous system that elicits pain hypersensitivity.

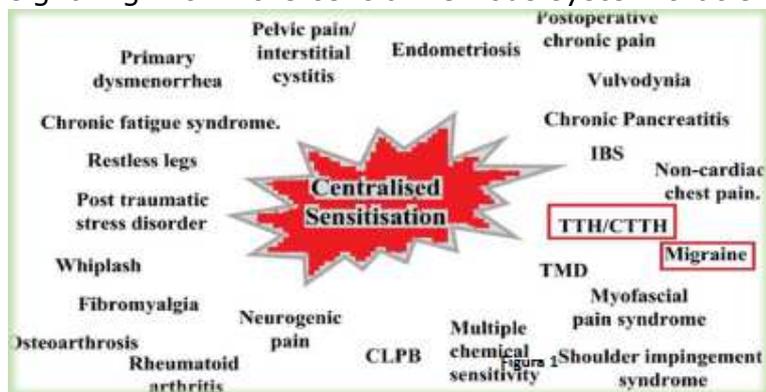


Figure 1

Many chronic pain patients, including those with persisting neck pain, pelvic pain, low back pain, fibromyalgia, subacromial impingement syndrome, chronic fatigue syndrome, tension-type headache, migraine, osteoarthritis, rheumatoid arthritis, tennis elbow, nonspecific arm pain, and patella tendinopathy show features suggestive of central sensitization (CS). (1)

Several studies suggest the idea that sensitization of the central nervous system can represent one underlying mechanism in the pathophysiology of headaches. (2)(fig.1)

What is an acupuncture point?

What is an acupoint? It can be defined as a "Neural Acupuncture Unit" (NAU) (3), alias an anatomical landmark that may contain relatively dense and concentrated neural and neuroactive components upon which acupuncture stimulation would elicit a more efficient therapeutic response compared to no acupoints. Neural Components may be

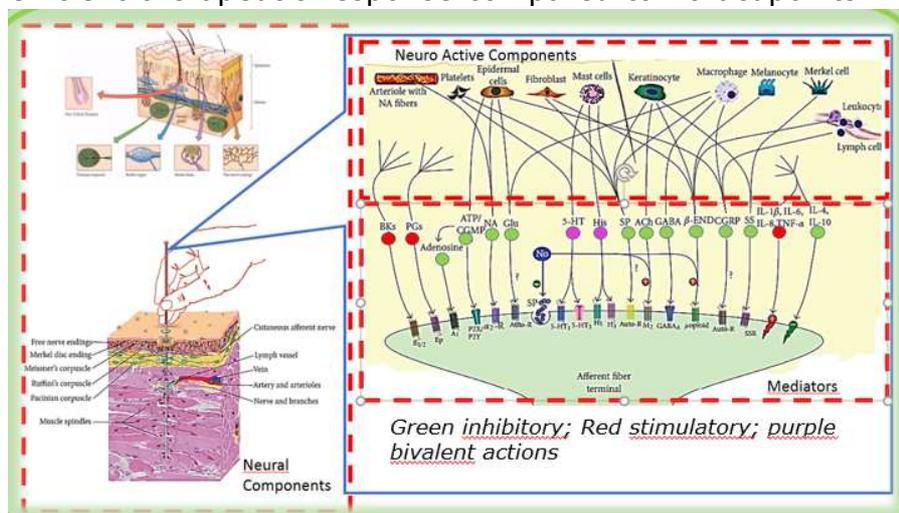


Figure 2

free nerve endings, encapsulated cutaneous receptors (Merkel, Meissner, Ruffini, and Pacinian corpuscles), sensory receptors (muscle spindles and tendon organs), and their afferent fibers, somatic efferent fibers innervating muscles, small nerve bundles, and plexus.

Neuroactive components of NAUs can be defined as no neuronal tissues

and cells that release various mediators capable of modulating afferent fiber transmission of NAUs. The most neuroactive components are mast cells, sympathetic nerve-rich blood vessels, and small lymphatic vessels. Mast cells that release many neuroactive mediators, including histamine, substance P (SP), and other immune factors via a degranulation mechanism in response to acupuncture stimulation, other nonneuronal cells, including macrophages, fibroblasts, lymphocytes, platelets, and keratinocytes are also involved in the modulation of local and afferent signals of NAUs. The mediators can be classified as inhibitory and stimulatory. The inhibitory mediators mainly include acetylcholine, noradrenaline (NA), γ -aminobutyric acid (GABA), β -endorphin, SP, somatostatin, nitric oxide (NO), CGRP, ATP/cGMP, and adenosine, which suppress afferent fiber excitability of NAUs. Most cytokines, prostaglandins, bradykinin, and other proinflammatory factors are stimulatory mediators that directly or indirectly enhance afferent fiber excitability of NAUs.

Serotonin (5-HT) and histamine can exert either inhibitory or stimulatory effects, depending upon which receptors they act on.

Acupoint virtual or real?

Nowadays the clinical practitioners stick too much to the fixed location of the acupoint and ignore the importance and necessity of searching and seeking acupoint.

We want underline an other concept, NAU which, in healthy state, would be in a virtual state mode could be subject to what has been defined as "acupoint sensitization", which indicates that when the organs change from the healthy state to the pathological state, acupoints shift from a virtual state model to a sensitized state. (4)

Another emergent concept is "dynamic states of APs" deeming that the size and function of acupoints are not in a stable state, but they are in a changing and dynamic one. The function and size of APs will vary along with the state of the body, particularly with the function of a specific internal organ. (5)

As another consequence we can often see that because of this considerable central sensitization some patients may be found to have large, well circumscribed areas of tenderness; as therefore we can speak of acupuncture zone instead of acupuncture point. (6) See fig.3.

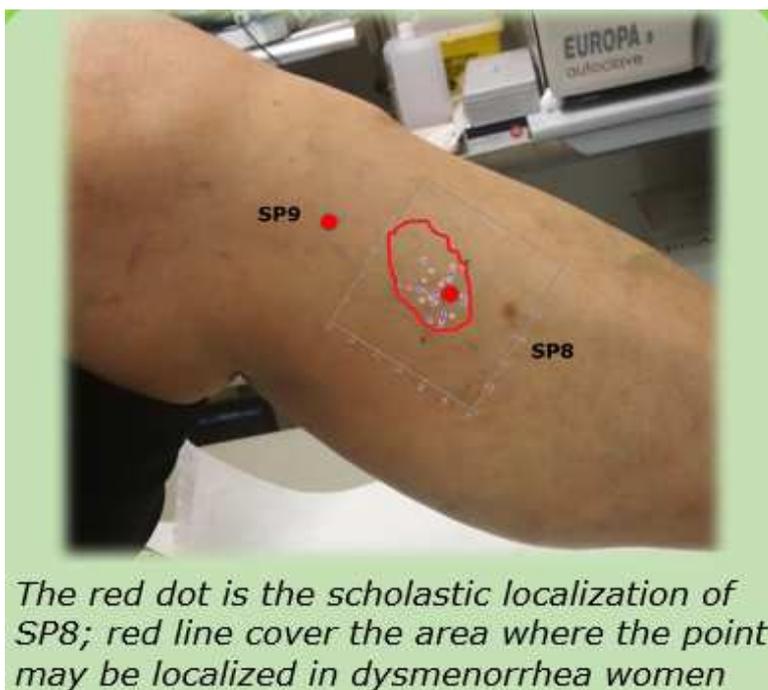


Figure 3 The side of the square measures 3 cm

When internal organs are under pathological conditions, acupoints become more sensitive, and the size of acupoints varies according to visceral alterations. These considerations again introduce us to the concept of "acupoint sensitization" to confirm the hypothesis that when something in the body changes from the healthy state to the pathological state, acupoints may shift from a virtual state model to the sensitized state model.

Accordingly, in pathological conditions, the diagnostic and therapeutic effects of sensitized acupoints on some pathologies could be enhanced. (7)

Anatomical Acupuncture

Anatomical acupuncture has been proposed by dr. Houchi Dung, an American acupuncturist who was born in Taiwan. (8) Doctor Dung utilizes three group of acupuncture points or zones. Those described in his writing are a total of 112; someone bilateral and someone on the medial line of the body. All the points were subdivided as follow:

Primary points: from point n°1 to point n°24

Secondary points: from point n° 25 to point n° 52

Tertiary points: from point n°53 to point n° 79

Non specific points: from point n°80 to point n°112

The numbering of the points is like this because, according to the theory of dr. Dung, this is the order to which they pass from a virtual or silent state to an active one and this would represent the progressive deterioration of body homeostasis. The site at which they appear is not whenever related to the site of primary nociception or pain of patient; it may be sometimes present bilateral or in a contralateral or mirror localization; moreover may be present in an axial mode, on the left and right side of

the body, and above and under the waist, it may also be segmentally or extra segmentally located. These features are similar to what is found in the case of CS pain.

The first step will consists in the examination of the 24 primary points; the successive will be to examine the other categories of points among those located on the painful areas. The purpose of the patient's examination is to identify among all these points the presence of hyperalgesia, allodynia or tenderness.

These clinical features

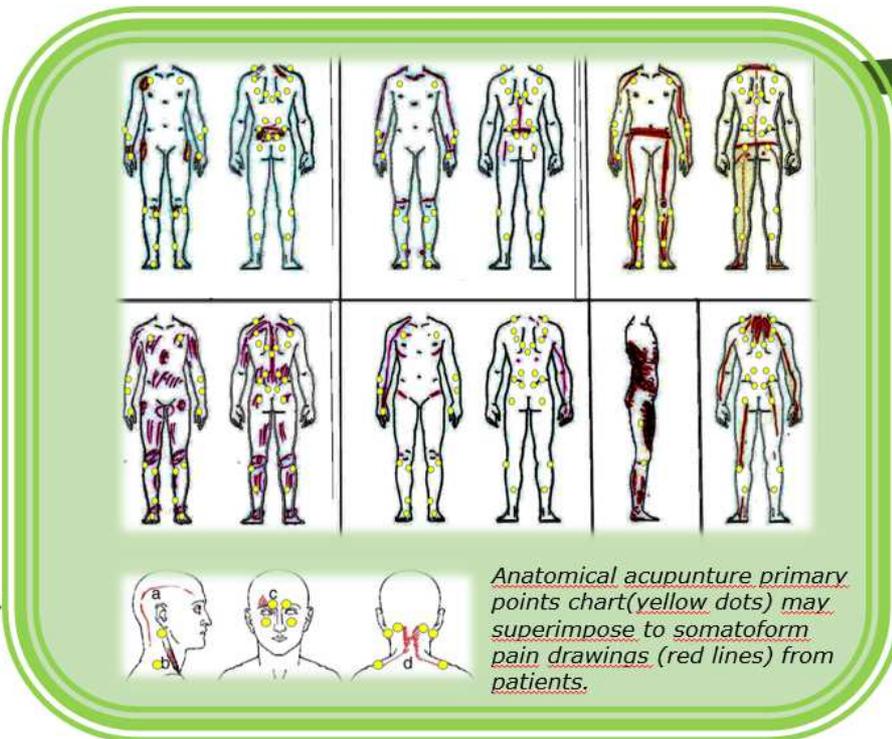


Figure 4

can be objectivized locally, bilaterally or in a contralateral or mirror localization to the site of pain; they may be also present in areas ipsilateral or contralateral which would be neuroanatomically illogical, including upper and lower limbs. Fig.4

Of consequently what has been said strongly recalls the concept of CS pain patients, opening the way to an acupuncture treatment.

Discussion

The acupuncture point is a virtual reality that could be activated following pathologies connected to it according to the rules of traditional acupuncture.

This dynamic activation involves its extension up to the size of a zone, even the displacement from the primitive seat of millimeters or few centimeters and the acquisition of peculiar qualities, primarily the tenderness, the hyperalgesia and the allodynia.

The points that are activated for a corresponding pathology can do so, as well as in the seat of the same, even remotely in the body homolaterally, contralaterally, bilaterally or even in a specular way on the sister's anatomical seat of the pathological one. The treatment of these points is decisive for therapeutic purposes.

These features are similar to what is found in the case of CS pain. Therefore, the activation of the acupuncture point could also be considered as a consequence of a CS process.

Conclusions

Anatomical acupuncture re propose the same concepts in a standardized and easily applicable way. In the particular case of migraine and headache the operative procedure will consist first in examining the 24 primary points in the whole body treating the sensitized ones. Fig.5

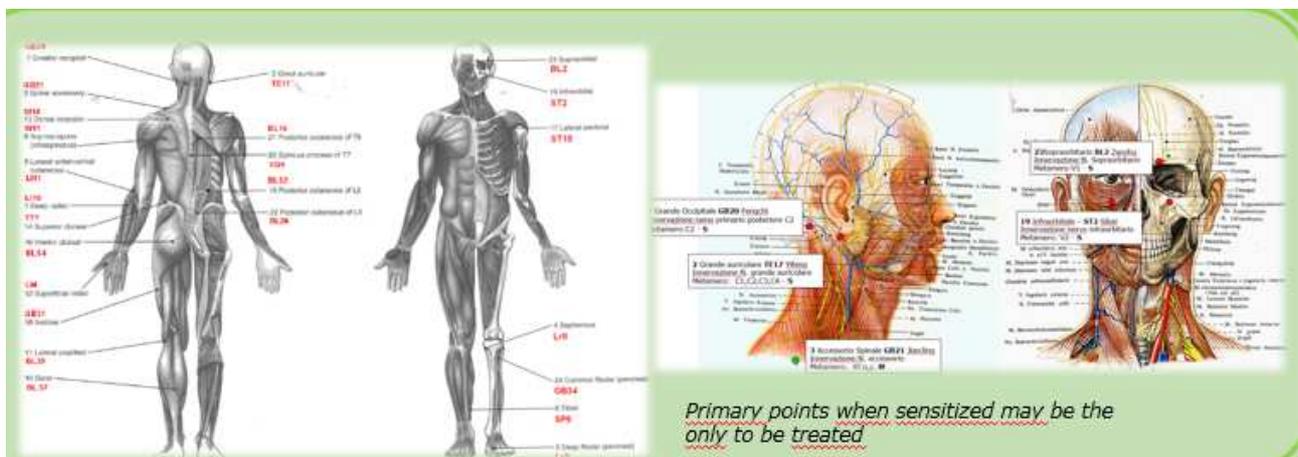


Figure 5

If there would have been only limited results the secondary, tertiary and non-specific points of the cephalic region and of the peri cranial muscles will be examined and treated **if sensitized**. Fig.6/7



Figure 6

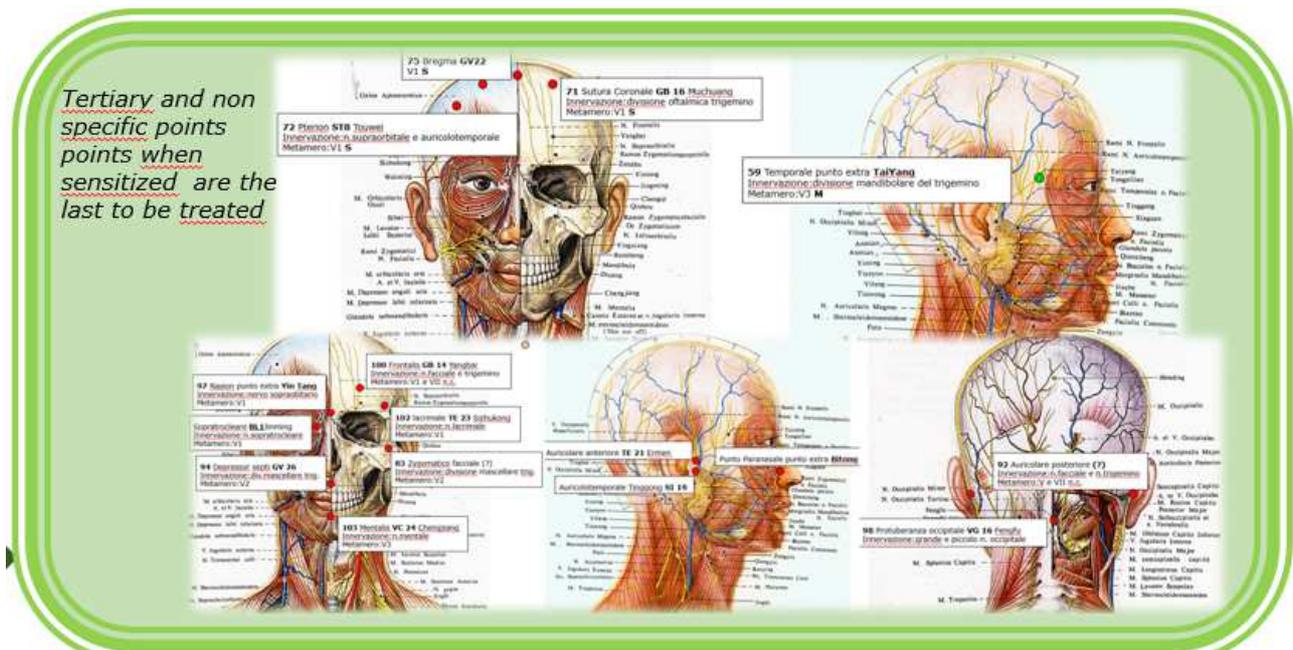


Figure 7

These method could represent an useful help to standard medical therapy especially in the case of chronic tension-type headache and chronic migraine.

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